

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B23K26/24 B23K26/26 B23K37/04 B23K37/047 B21C47/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B23K, B21C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 04, 31 August 2000 (2000-08-31) & JP 2000 000612 A (NIPPON STEEL CORP), 7 January 2000 (2000-01-07)	4
Y	abstract	1,2
Y	DE 40 22 062 C (THYSSEN STAHL AG) 14 November 1991 (1991-11-14)	1,2
A	column 4, line 30 - column 5, line 31; figures 1-3	3
A	DE 198 52 462 A (J.W. OHG) 25 May 2000 (2000-05-25) column 4, lines 8-36; figures 1,2a-c,3a-c -/--	1,2

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

15 December 2004

Date of mailing of the international search report

22/12/2004

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 299 358 B (THYSSEN STAHL AG) 2 January 1992 (1992-01-02) cited in the application the whole document -----	1-4
A	DE 93 14 720 U (THYSSEN INDUSTRIE) 2 December 1993 (1993-12-02) cited in the application the whole document -----	1-4
A	US 3 109 914 A (T.A. MCCOY) 5 November 1963 (1963-11-05) the whole document -----	1-4

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2000000612	A	07-01-2000	NONE	
DE 4022062	C	14-11-1991	DE 4022062 C1	14-11-1991
DE 19852462	A	25-05-2000	DE 19852462 A1 AT 233611 T DE 59904484 D1 DK 1128916 T3 WO 0029138 A1 EP 1128916 A1 ES 2194525 T3 NO 20012354 A PT 1128916 T	25-05-2000 15-03-2003 10-04-2003 30-06-2003 25-05-2000 05-09-2001 16-11-2003 11-07-2001 31-07-2003
EP 0299358	B	18-01-1989	DE 3723611 A1 AT 71006 T AU 602415 B2 AU 1904088 A CA 1300690 C DE 3867344 D1 EP 0299358 A1 ES 2028195 T3 GR 3003589 T3 JP 1057992 A JP 2622271 B2 KR 9709003 B1 US 4872940 A	26-01-1989 15-01-1992 11-10-1990 19-01-1989 12-05-1992 13-02-1992 18-01-1989 01-07-1992 16-03-1993 06-03-1989 18-06-1997 03-06-1997 10-10-1989
DE 9314720	U	02-12-1993	DE 9314720 U1	02-12-1993
US 3109914	A	05-11-1963	GB 961747 A	24-06-1964